

Update on BDCP Proposed Project Near-Term and Early Long-Term Physical Modeling Results

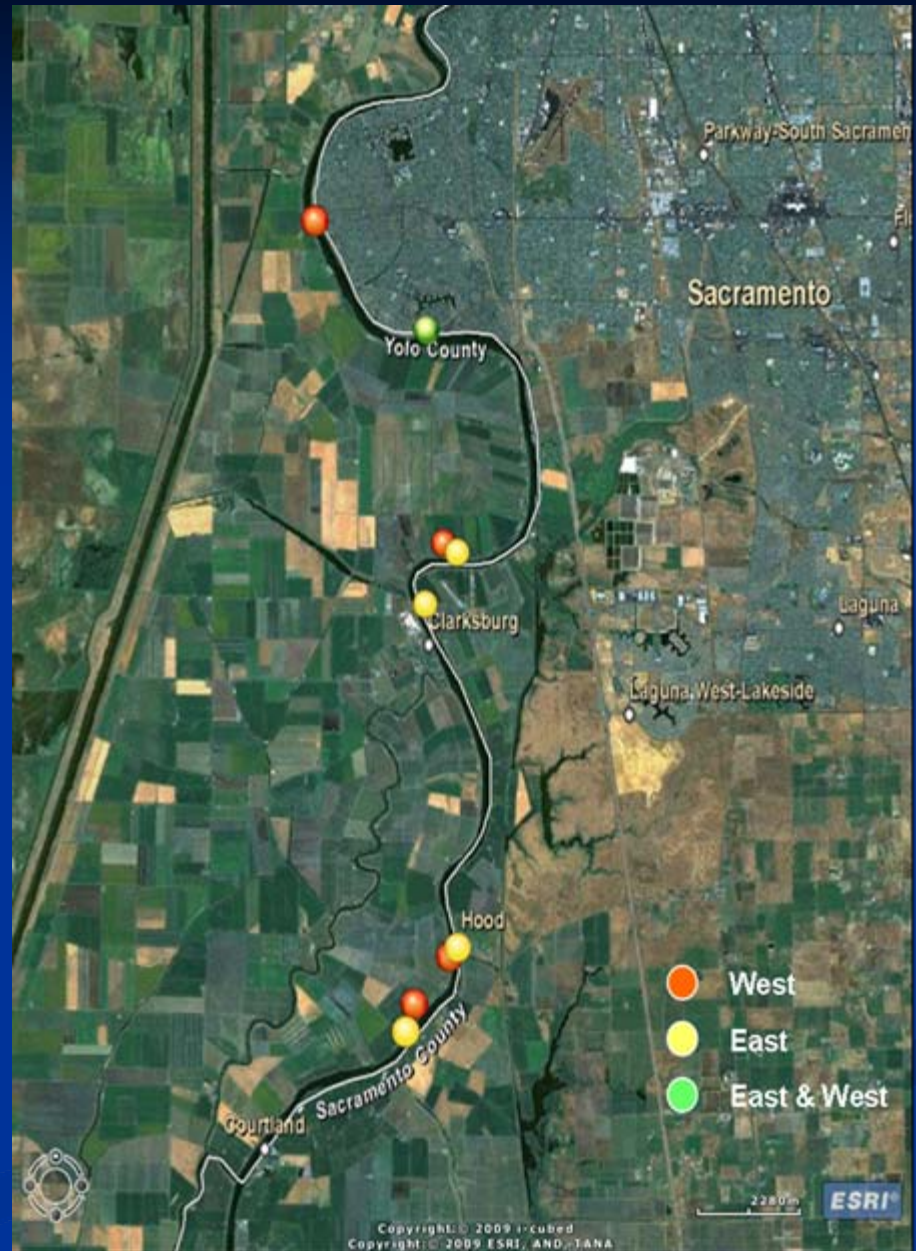
BDCP Steering Committee

December 3, 2009

Outline

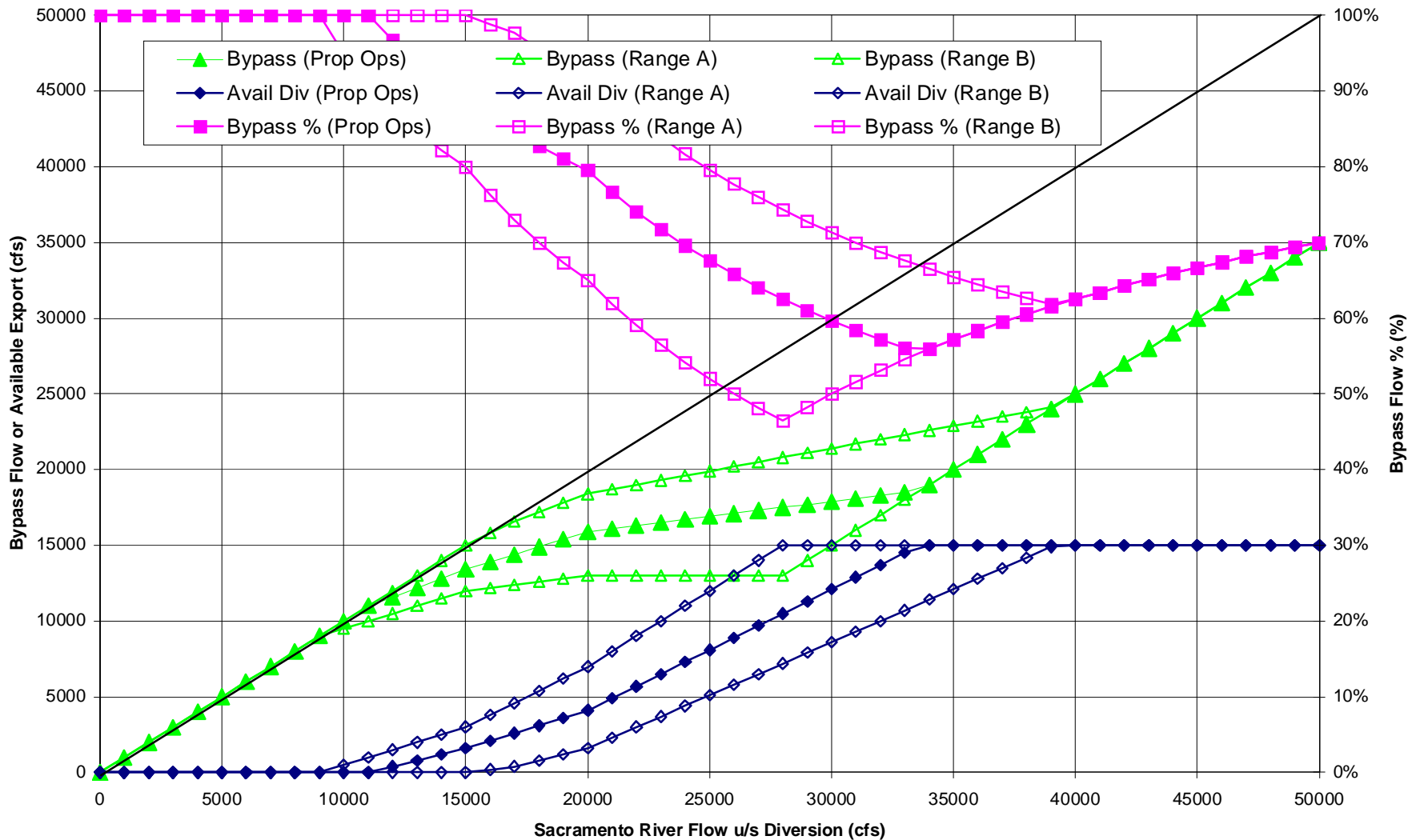
- Update on Physical Modeling
- Simulation of North Delta Diversion
- Hydrodynamic Changes throughout the Delta
- Water Quality Changes throughout the Delta
- Approach for Transport and Fate Changes
- Temperature Modeling

North Delta Diversion Bypass Flows and Intake Operations



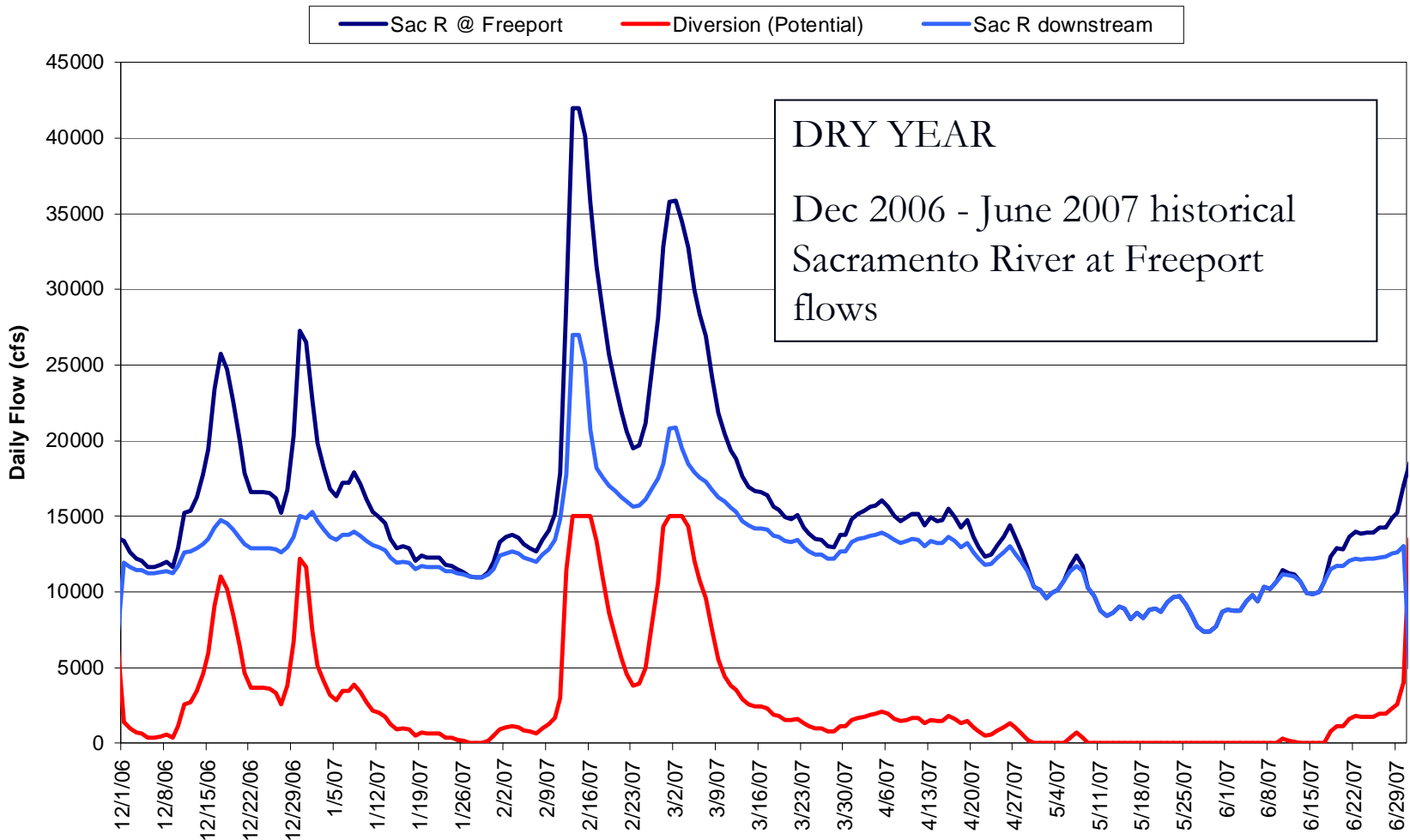
Range of North Delta Diversion Bypass Flow Criteria

Proposed North Delta Diversion Bypass Rule: February - April



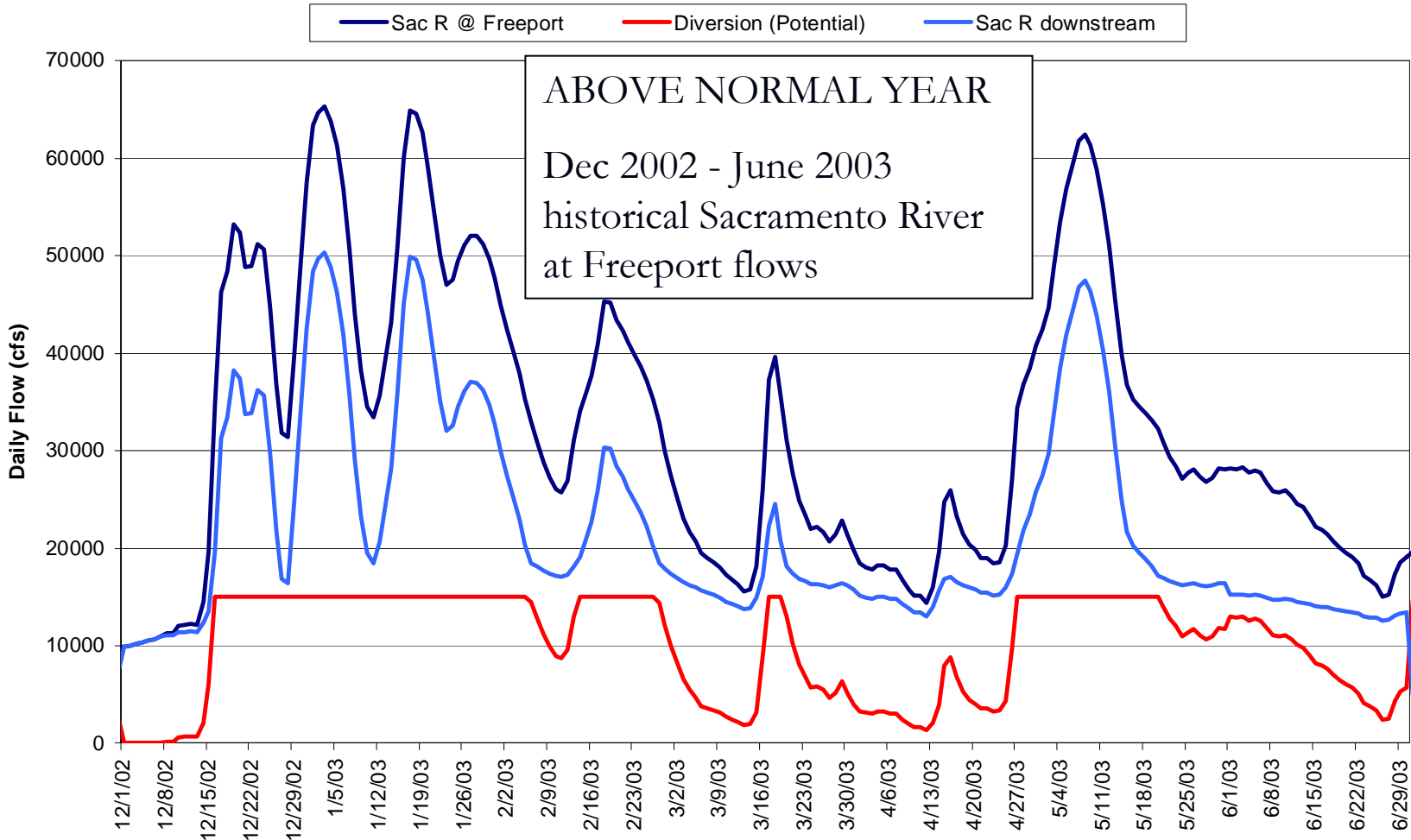
Example North Delta Flow Regime under “Proposed Operations” Rules

North Delta Diversions - Historical Flow Example
DRAFT Proposed Operations



Example North Delta Flow Regime under “Proposed Operations” Rules

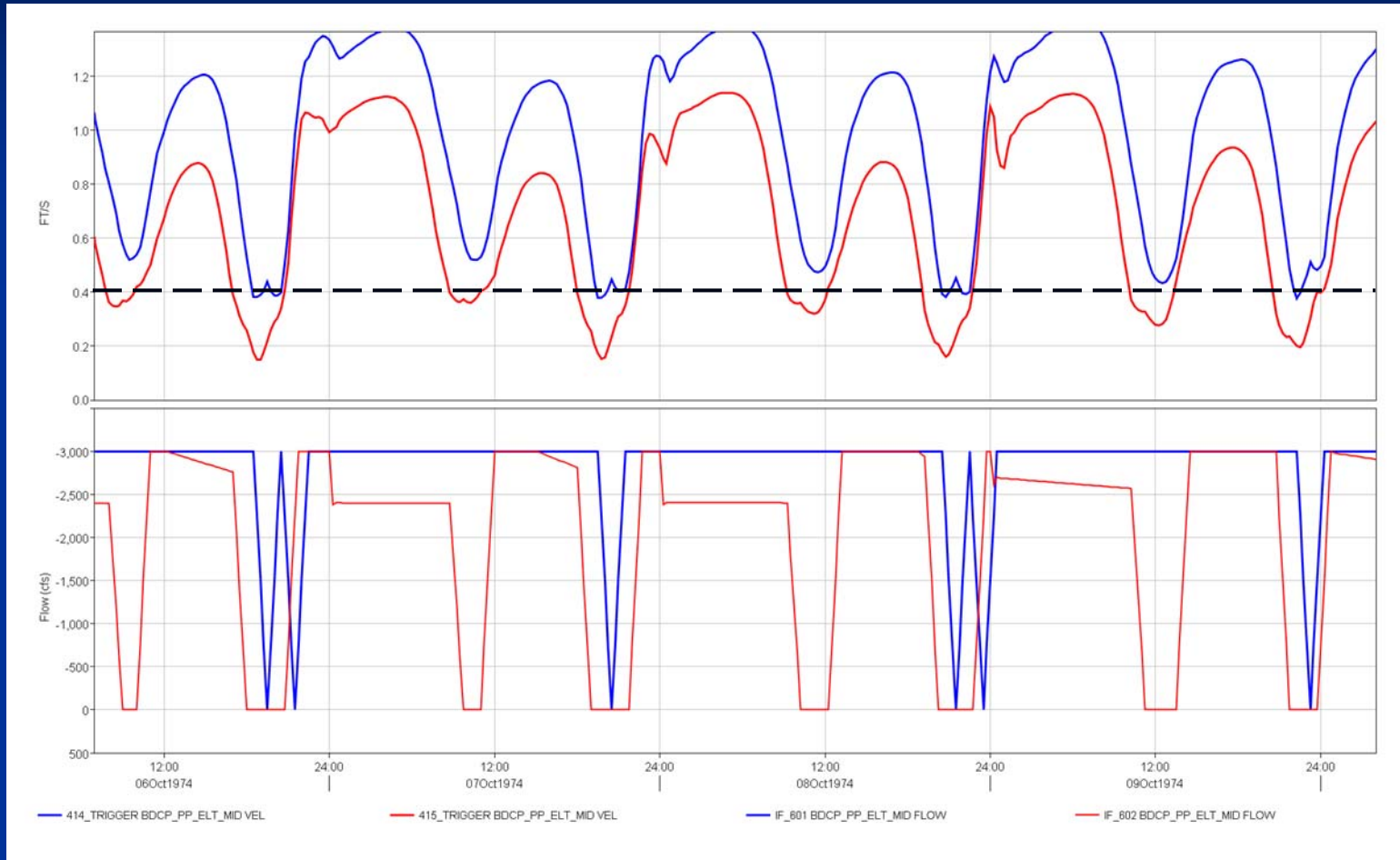
North Delta Diversions - Historical Flow Example
DRAFT Proposed Operations



North Delta Diversion – DSM2 Simulation

- 5 proposed intakes in the north Delta are dynamically simulated using the operating rules feature in DSM2, version 8
- Intakes operating criteria:
 - Each intake operates as long as:
 - CALSIM II daily diversion volume > 0
 - Instantaneous velocity downstream of an intake > 0.4 fps
 - Daily diversion volume is not met
 - Intakes not operated if criteria is not satisfied
 - Priority is given for upstream to downstream intake operations
 - Intake diversions are ramped over an hour to allow smooth transitions when they are turned on and off

North Delta Diversion Simulation



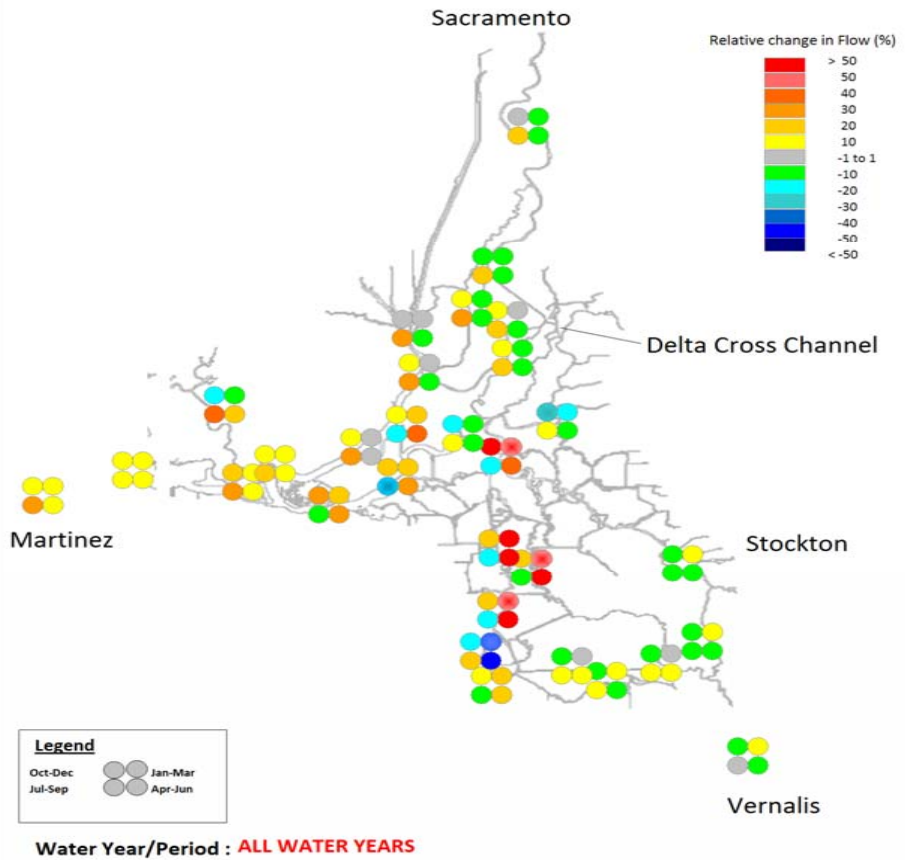
- Instantaneous sweeping velocity criteria
 - Velocities of 0.4 fps are maintained at each intake at every time step
 - Instantaneous velocity just downstream of each intake is monitored

Hydrodynamic Summary Results

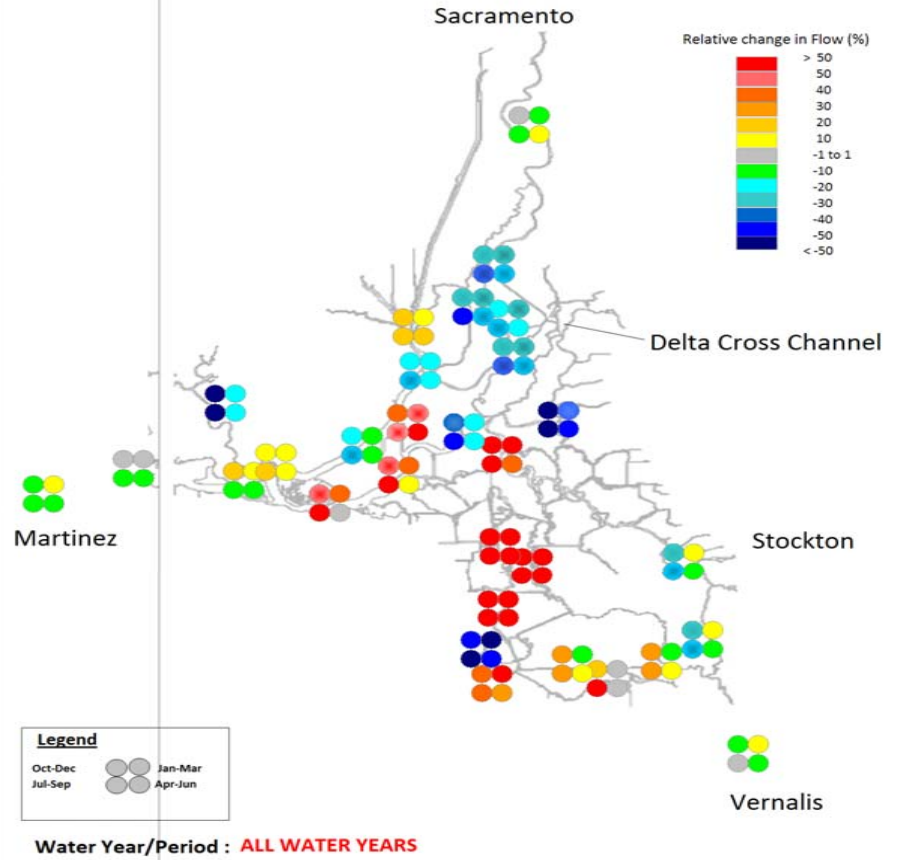
- Location of Hydrodynamic output summaries
- **Net channel flows**
- Riverine-estuarine changes (point and freq of reversal)

Net Flow Changes

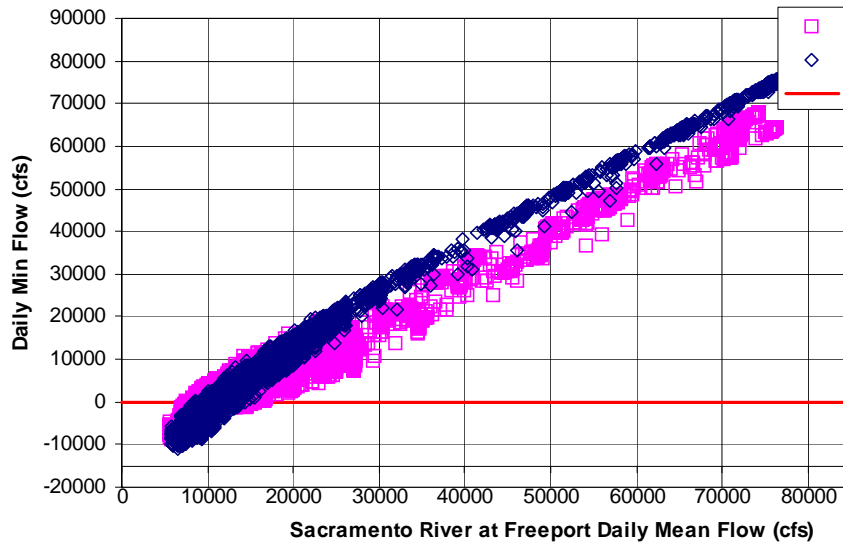
Seasonal Change in Flow
(RPA minus Pre-BO)



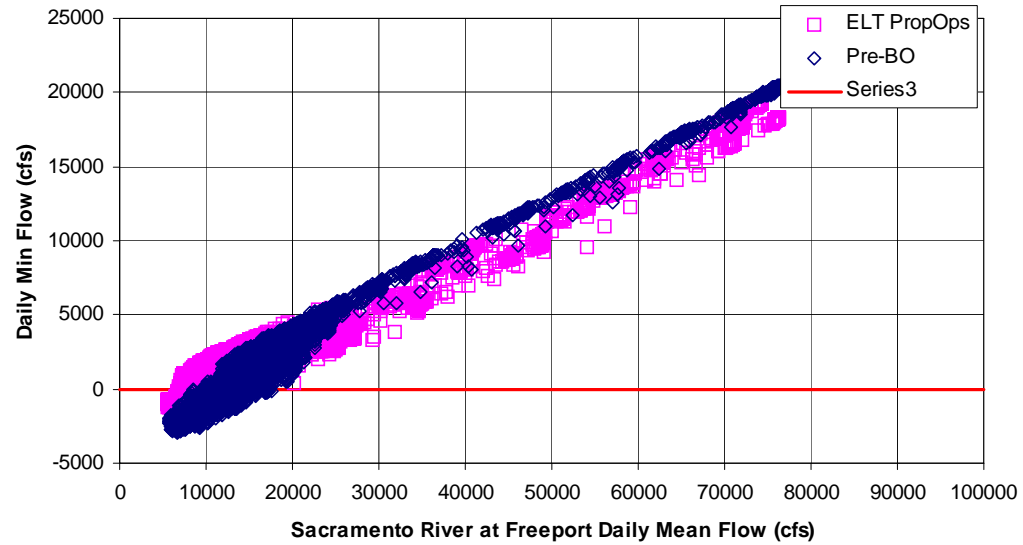
Seasonal Change in Flow
(ELT_PropOps minus Pre-BO)



Sacramento River upstream Sutter and Steamboat

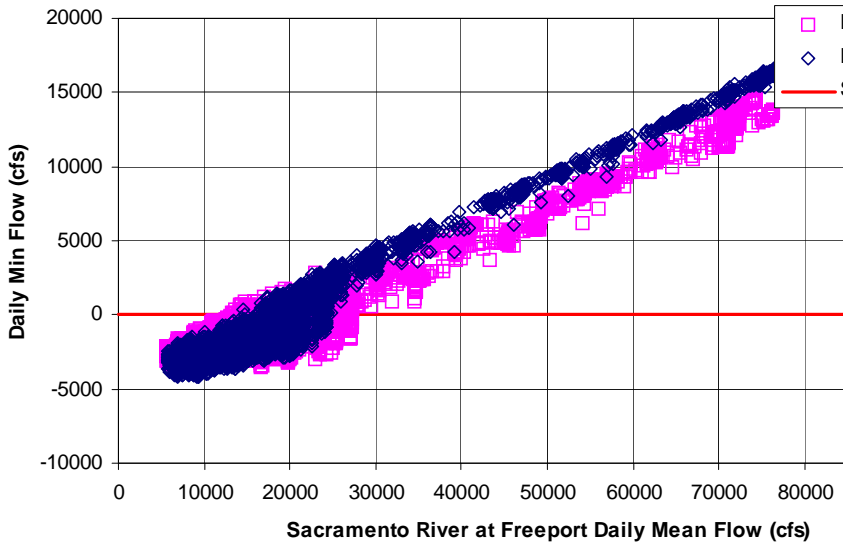


Sutter Slough at Head

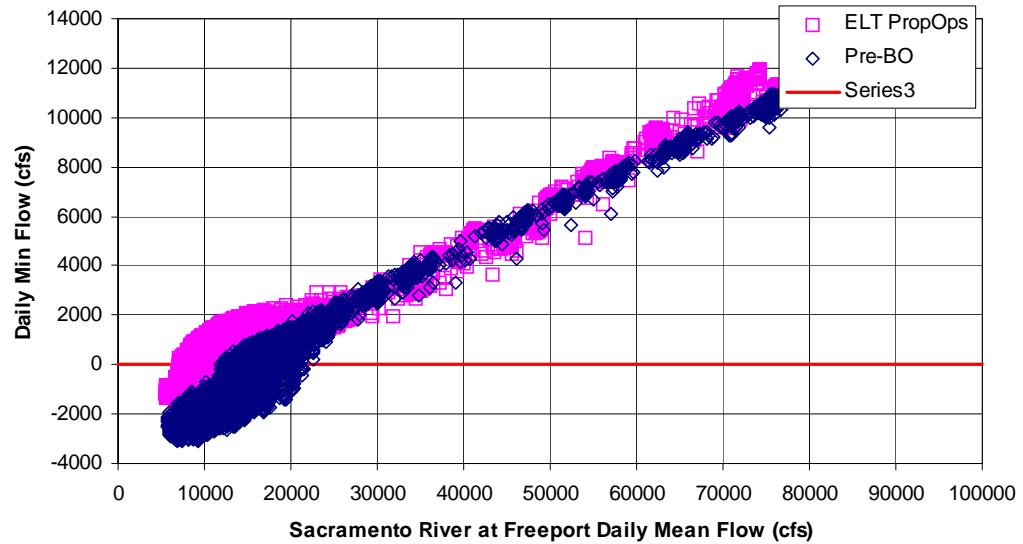


Change in North Delta Tidal Flows

Steamboat Slough upstream of Sutter Confluence



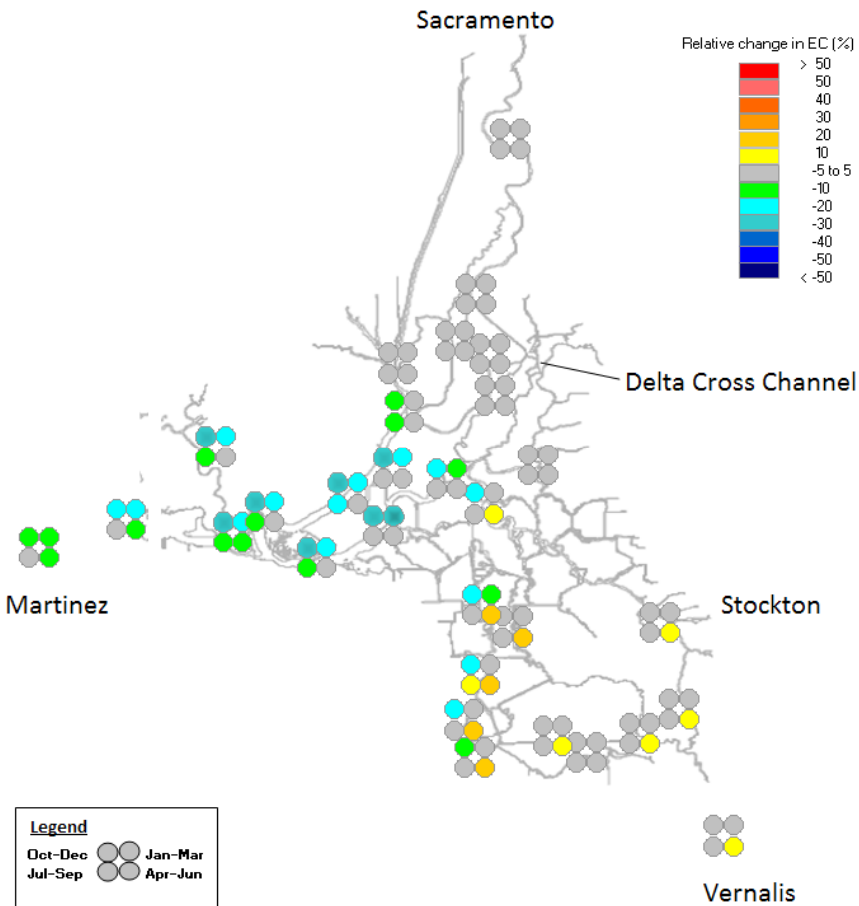
Miner Slough



Simulated Delta Salinity Changes

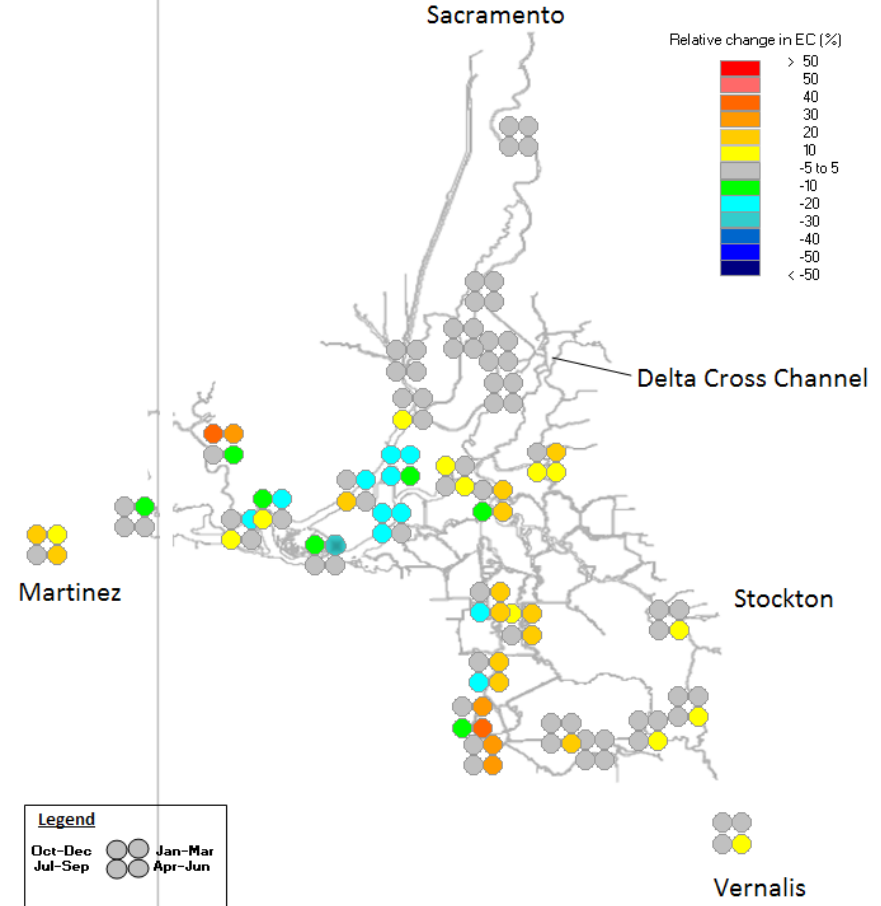
Seasonal Change in Salinity

(RPA minus Pre-BO)

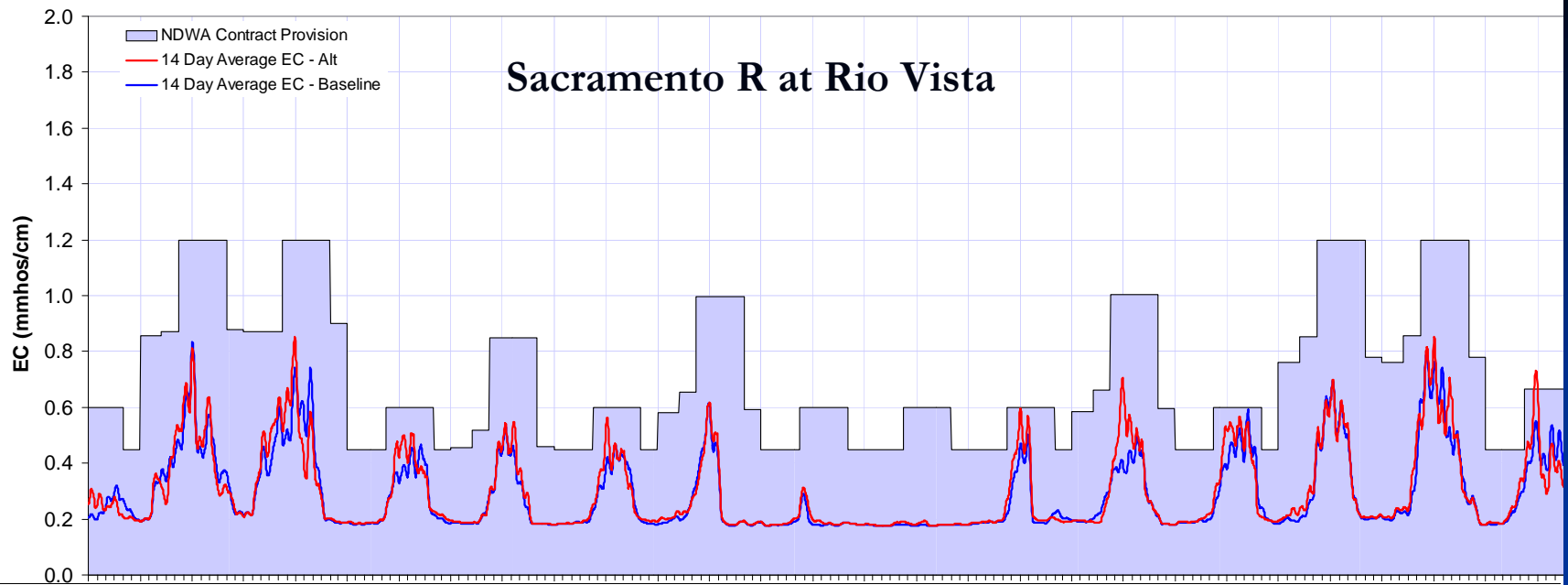


Seasonal Change in Salinity

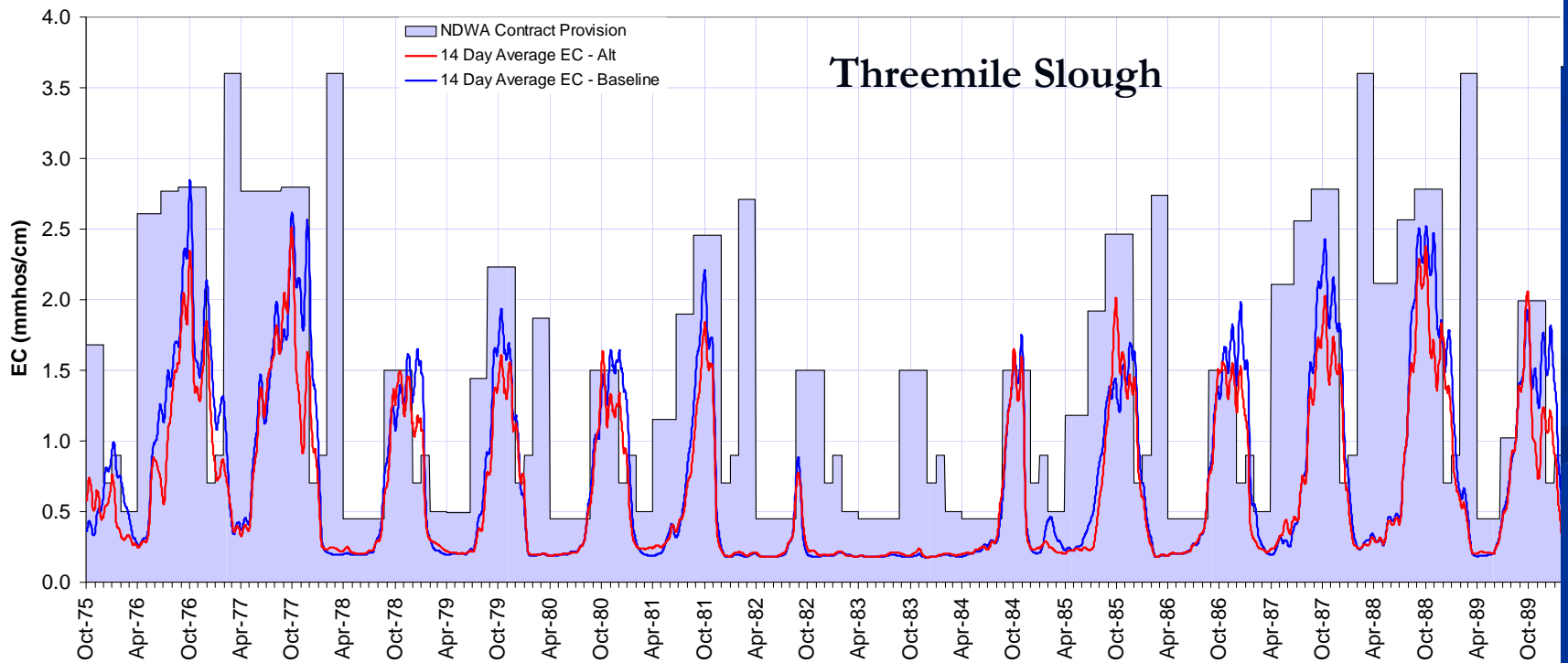
(ELT_PropOps minus Pre-BO)

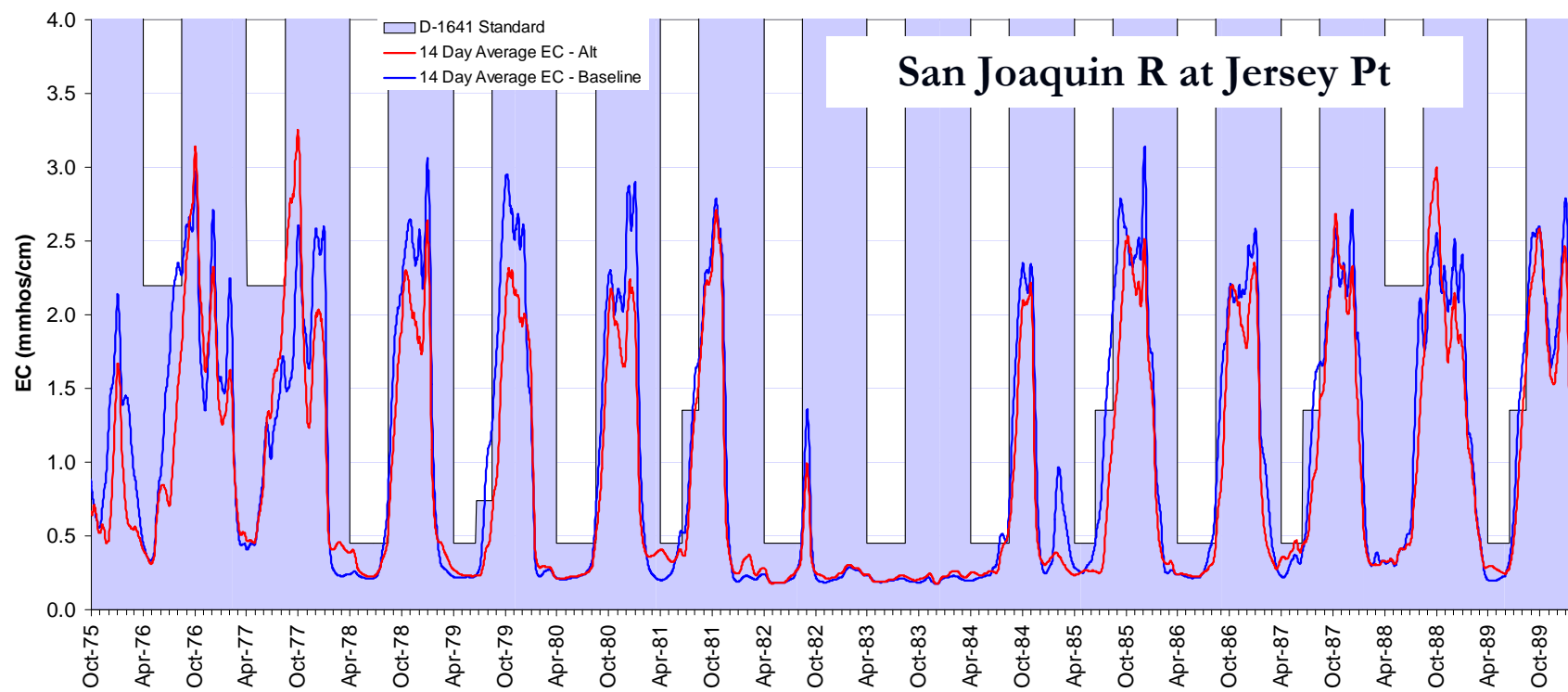
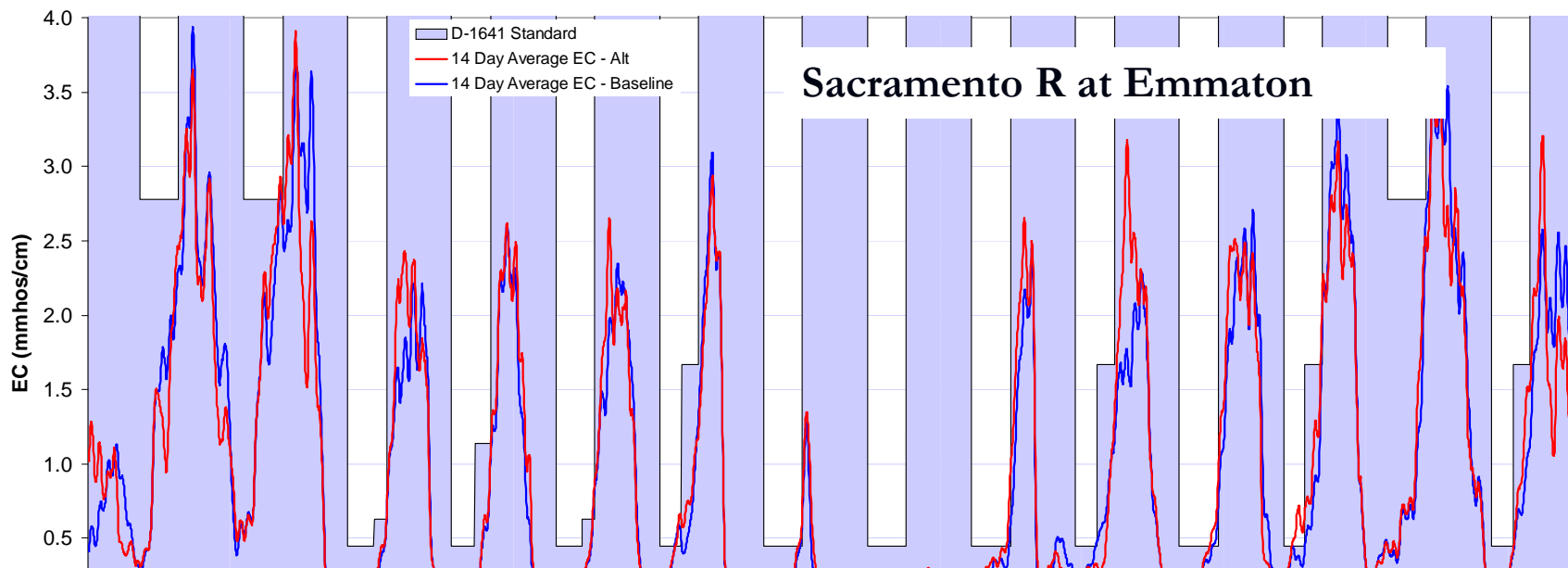


Sacramento R at Rio Vista

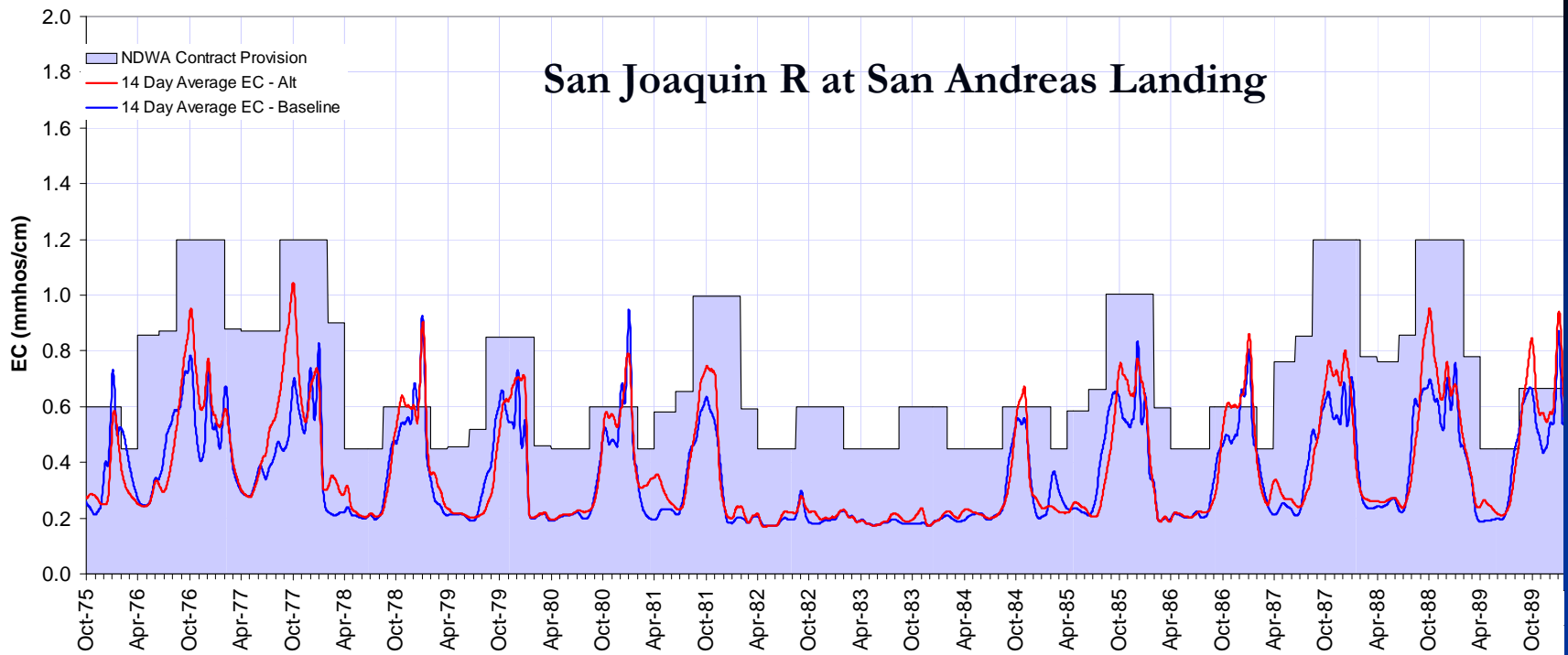


Threemile Slough

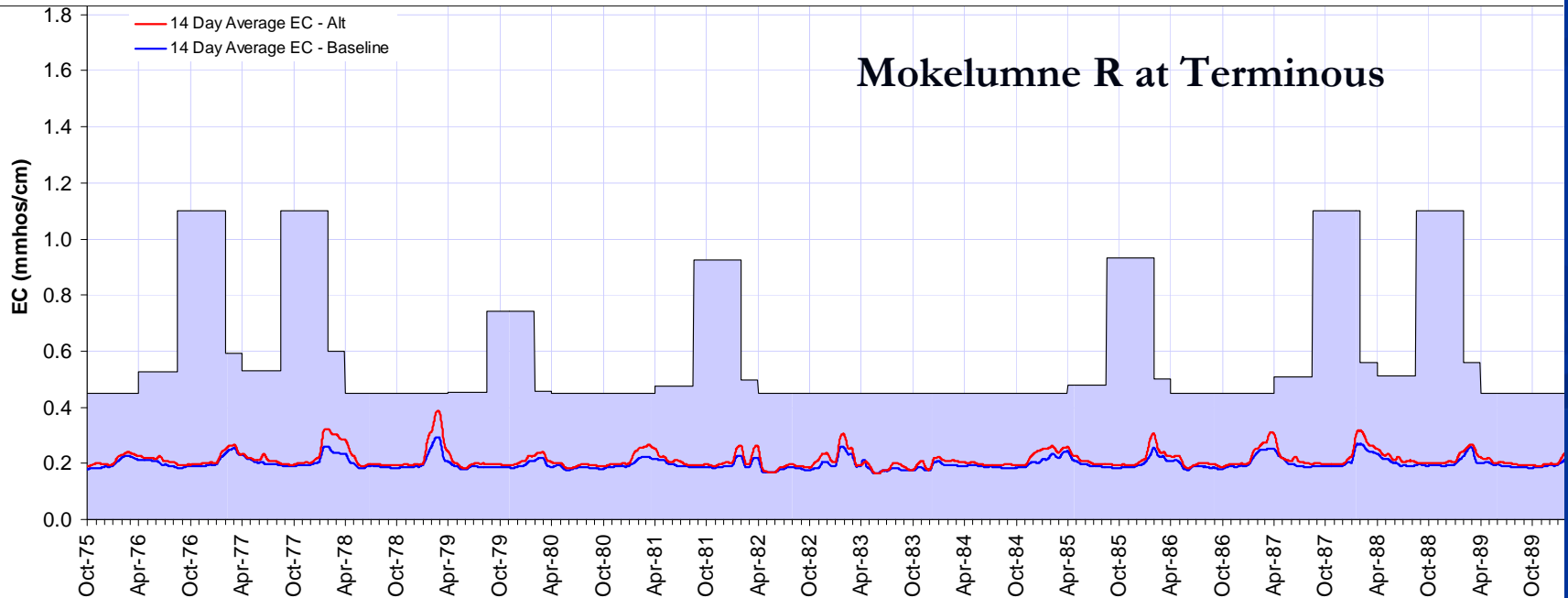




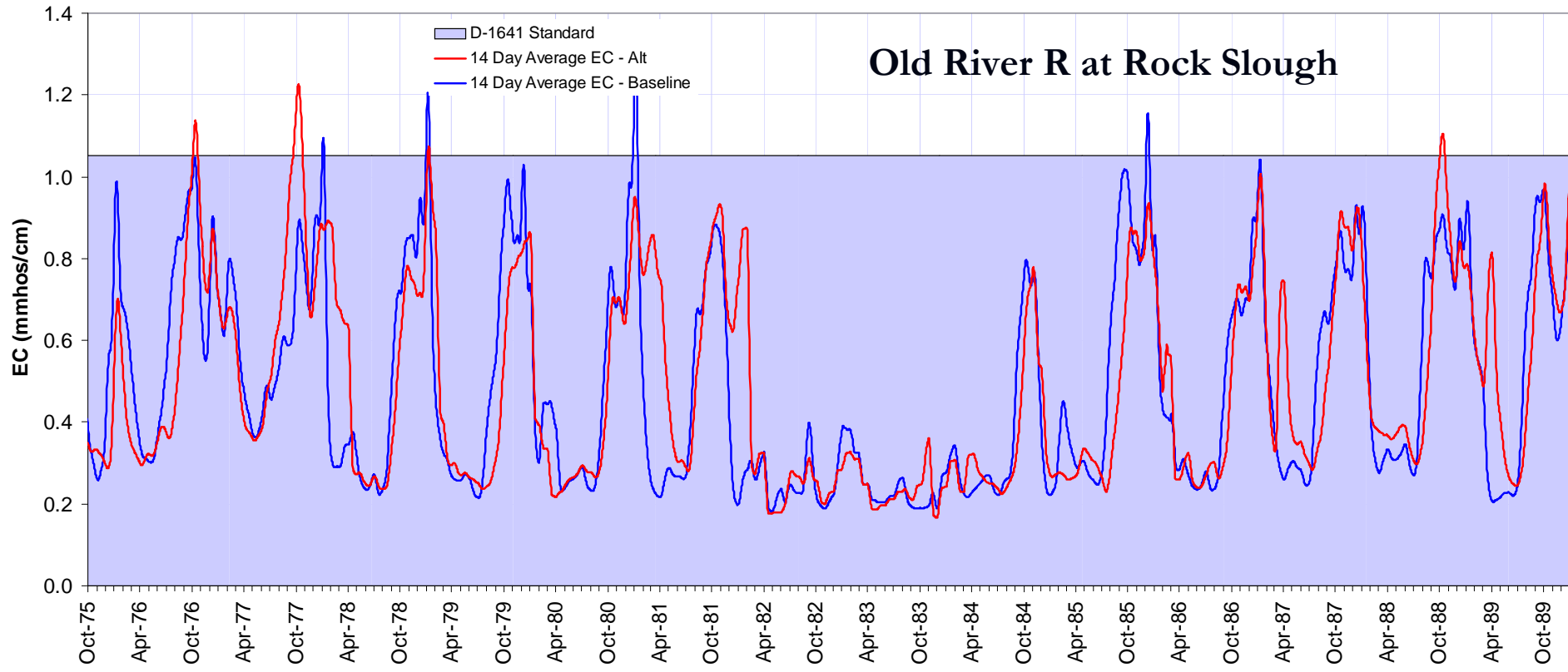
San Joaquin R at San Andreas Landing



Mokelumne R at Terminous



Old River R at Rock Slough

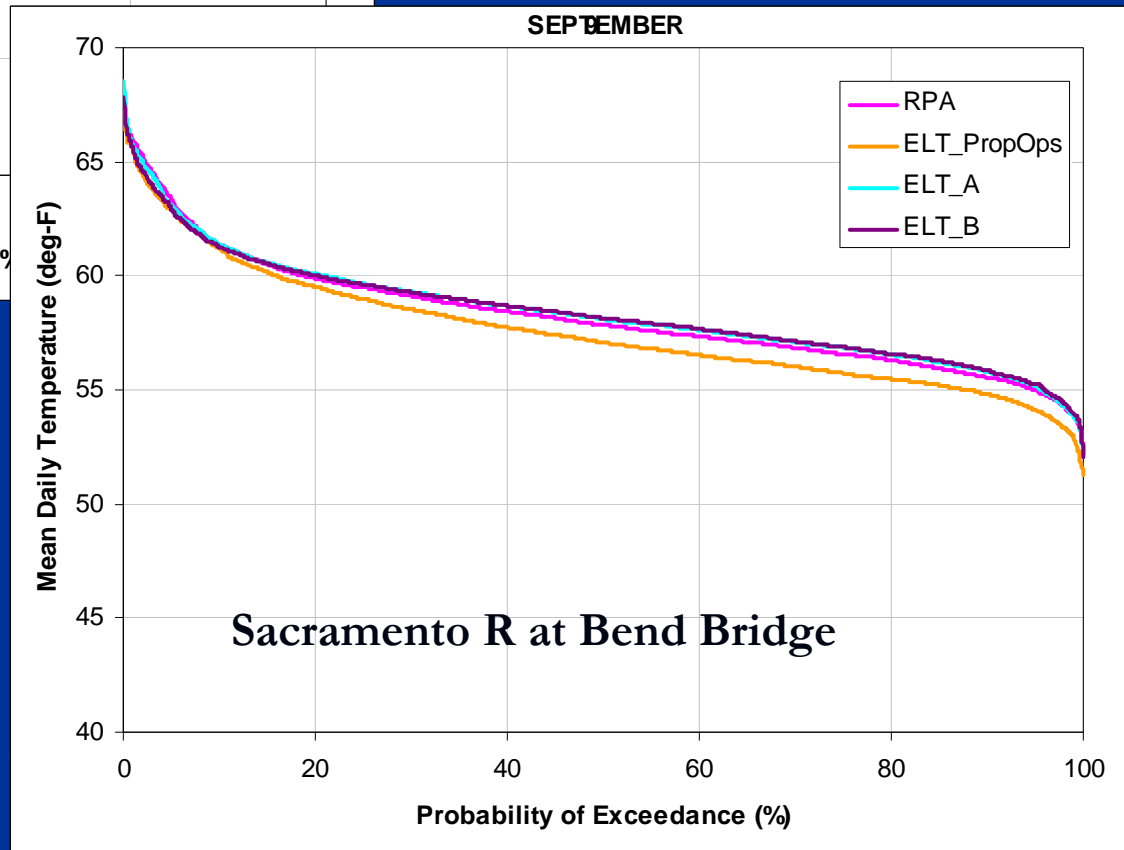
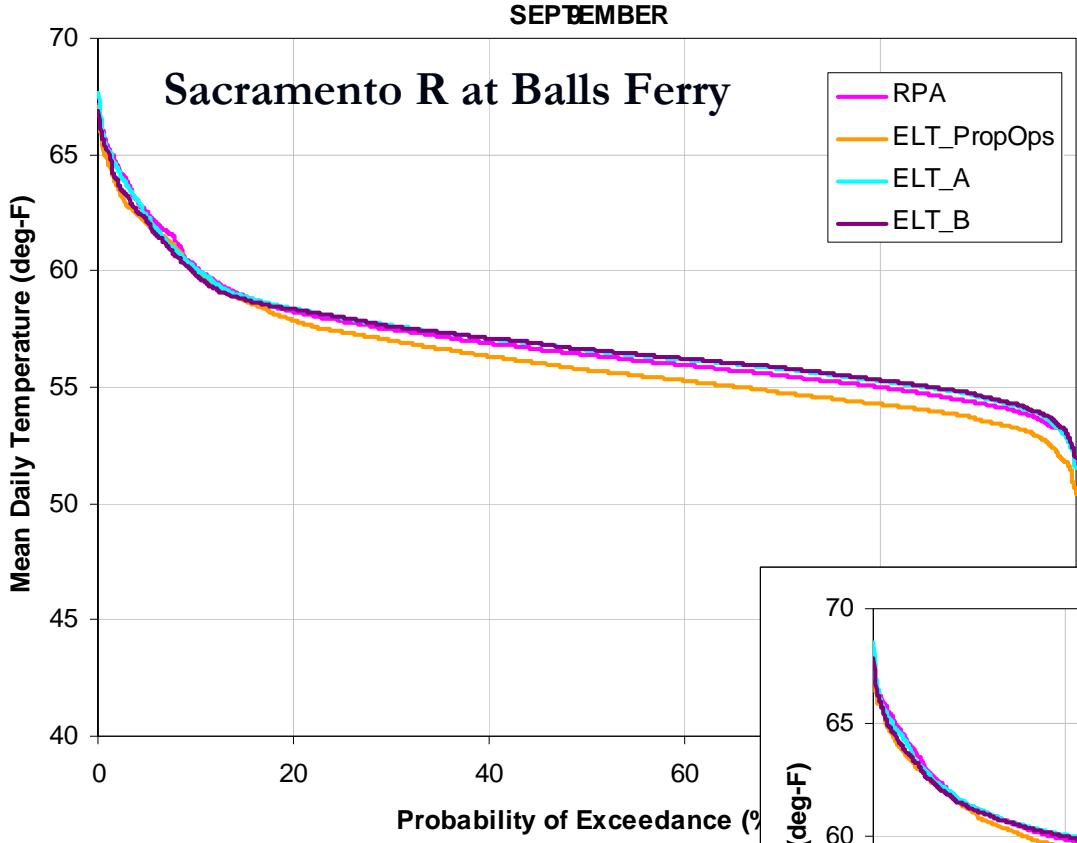


Particle Tracking Analyses

- Location of particle insertions and tracking locations
- Analyses will be complete next week

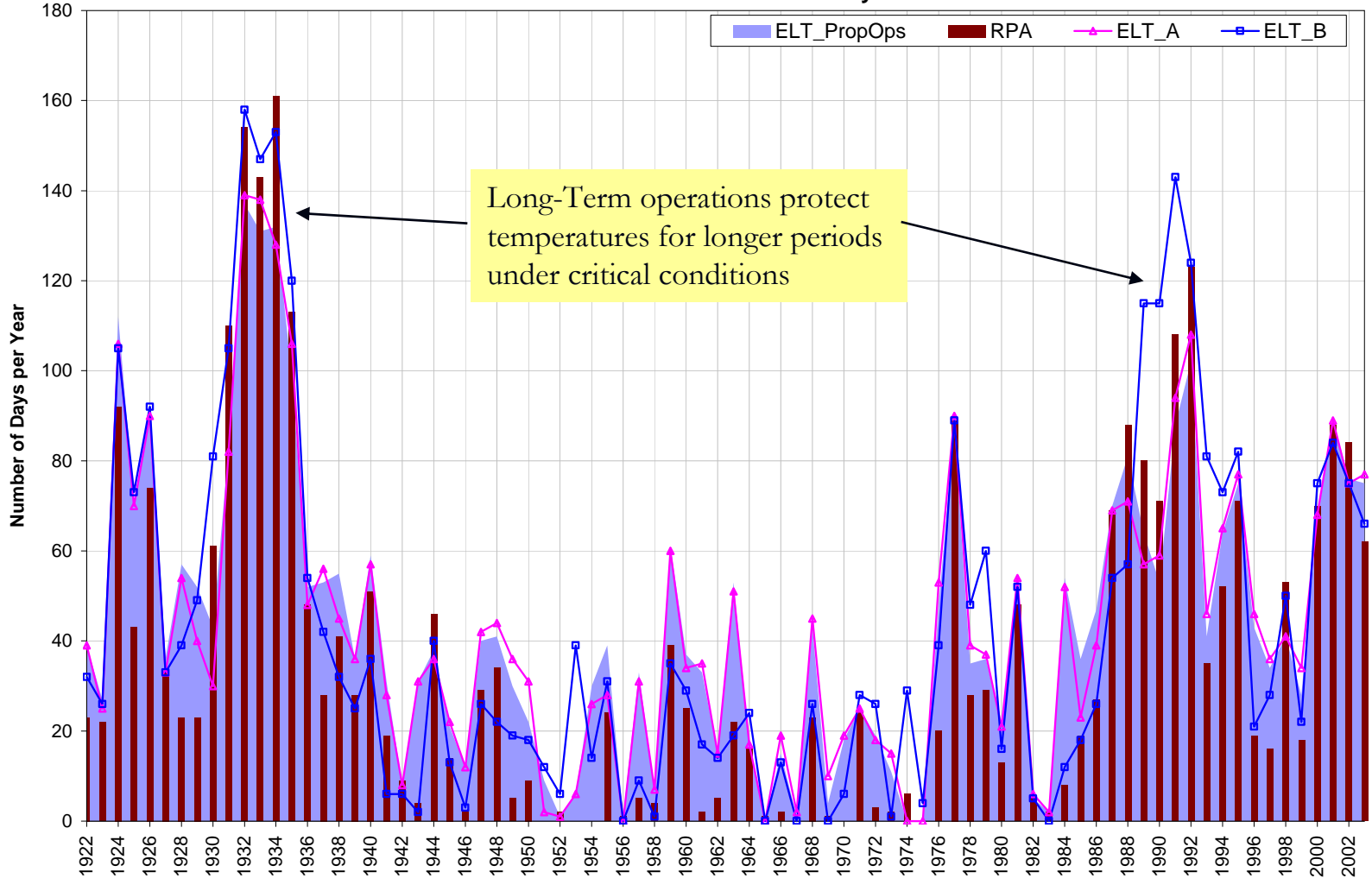


Sacramento River Temperature



Balls Ferry – Number of Days per Water Year Exceeding 56 deg-F

Number of Days per Water Year Exceeding 56 deg-F
Sacramento River at Balls Ferry



Preliminary Results: RPA conditions represents current estimate of "most likely" operation under the BOs

On-Going Work

- Particle tracking analyses (December)
- Source water finger-printing analyses (December)
- Sacramento River temperature analysis (December)
- ANN Re-training completion (Dec-Jan)
- CALSIM II daily flow mapping and ops (Dec-Jan)
- Tidal marsh sensitivity analysis (Dec-Jan)
- Delta temperature and turbidity analyses (Dec-Apr)
- Climate change (Dec-Apr)
 - Regional climate change and watershed hydrology
 - Sea level rise and 3-D modeling